Patent
Attorney's Docket No. 99-445

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)
)
John Richard ZAVGREN, Jr.) Group Art Unit: 2663
)
Application No.: 09/489,517) Examiner: D. Ferris
)
Filed: January 21, 2000)
)
For: SYSTEMS AND METHODS FOR)
VISUALIZING A)
COMMUNICATIONS NETWORK)

TRANSMITTAL FOR APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Sir:

Transmitted herewith in triplicate is an Appeal Brief in support of the Notice of Appeal filed December 15, 2003.

Enclosed is a check for ☐ $165.00 ☐ $330.00 to cover the Government fee.

☒ Charge $330.00 to Deposit Account No. 07-2347 for the fee due.

The Commissioner is hereby authorized to charge any other appropriate fees that may be required by this paper that are not accounted for above, and to credit any overpayment, to Deposit Account No. 07-2347. This paper is submitted in triplicate.

Respectfully submitted,

Verizon Corporate Services Group Inc.

By: Joel Wall

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CUSTOMER NUMBER: 32127
Date: February 11, 2004

Petition for Extension of Time
Attorney's Docket No.: 99-445
U.S. Serial No.: 09/489,517

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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Serial No.: 09/489,517	)	Group Art Unit: 2663
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APPEAL BRIEF

This Appeal Brief is submitted in triplicate in response to the final Office Action, dated August 14, 2003, and in support of the Notice of Appeal, filed December 15, 2003.

I. REAL PARTY IN INTEREST

The real parties in interest in this appeal are Genuity Inc. and Verizon Corporate Services Group Inc.

II. RELATED APPEALS AND INTERFERENCES

Appellant is unaware of any related appeals or interferences.

III. STATUS OF CLAIMS

Claims 1-36 are pending in this application.

Claims 1-3, 6-11, 13-16, 19-24, 26-32, and 34-36 have been finally rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al. (U.S. Patent No. 6,453,346) in view of Robins et al. (U.S. Patent No. 5,049,873).

Claims 4, 5, 17, and 18 have been finally rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al. and Robins et al. in view of Feldmann (U.S. Patent Application Publication No. US 2002/0021675 A1).

Claims 12, 25, and 33 have been finally rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al. and Robins et al. in view of Lane (U.S. Patent No. 5,437,009).

Claims 1-36 are the subject of the present appeal. These claims are reproduced in the Appendix of this Appeal Brief.

IV. STATUS OF AMENDMENTS

A Request for Reconsideration was filed subsequent to the final Office Action, dated August 14, 2003. No amendments to the claims have been filed subsequent to the final Office Action.

V. SUMMARY OF THE INVENTION

The present invention is directed to systems and methods that monitor network activity in a non-intrusive manner by recording the network activity, as it occurs, in the local memories of

nodes in the network. The systems and methods can then reconstruct the network activity from the information stored in the node memories to facilitate visualization of the network as it evolved over time.

With reference to Figs. 1 and 4, during network 100 (Fig. 1) operation, nodes 110 record network events in their memories. To permit recreation of the network operation, system 400 (Fig. 4) collects information from the node memories and reconstructs the network operation. System 400 displays the network topology with the actual node positions to an operator via a graphical user interface (see, e.g., Figs. 6-8). System 400 reconstructs the network as it evolved over time and permits the operator to manipulate the playback of the network operation via the graphical user interface. For example, system 400 may permit the operator to fast forward, rewind, step forward or backward, etc. to visualize the network as it evolved over time. In addition to allowing the operator to monitor the network operation, system 400 may provide detailed information to the operator regarding any node, message, or link included in the network.

VI. GROUPING OF CLAIMS

Appellant is satisfied to let claims 1, 2, and 6 stand or fall together. Appellant elects claim 1 as representative of the group.

Appellant is also satisfied to let claims 7-9 stand or fall together. Appellant elects claim 7 as representative of the group.

Appellant is also satisfied to let claims 14, 15, and 19 stand or fall together. Appellant elects claim 14 as representative of the group.

Appellant is also satisfied to let claims 20-22 stand or fall together. Appellant elects claim 20 as representative of the group.

Appellant is also satisfied to let claims 27 and 30 stand or fall together. Appellant elects claim 27 as representative of the group.

Appellant is also satisfied to let claims 34-36 stand or fall together. Appellant elects claim 34 as representative of the group.

Claims 3-5, 10-13, 16-18, 23-26, 28, 29, and 31-33 do not stand or fall together with any of the other claims for the reasons discussed in the Argument section below.

VII. ISSUES

A. Whether claims 1-3, 6-11, 13-16, 19-24, 26-32, and 34-36 are unpatentable over Garg et al. (U.S. Patent No. 6,453,346) in view of Robins et al. (U.S. Patent No. 5,049,873);

B. Whether claims 4, 5, 17, and 18 are unpatentable over Garg et al. and Robins et al. in view of Feldmann (U.S. Patent Application Publication No. 2002/0021675 A1); and

C. Whether claims 12, 25, and 33 are unpatentable over Garg et al. and Robins et al. in view of Lane (U.S. Patent No. 5,437,009).

VIII. ARGUMENT

A. The rejection of claims 1-3, 6-11, 13-16, 19-24, 26-32, and 34-36 under 35 U.S.C. § 103(a) as unpatentable over Garg et al. (U.S. Patent No. 6,453,346) in view of Robins et al. (U.S. Patent No. 5,049,873) should be REVERSED.

Claims 1-3, 6-11, 13-16, 19-24, 26-32, and 34-36 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al. in view of Robins et al.

As stated above with regard to the groupings of the claims, claim 1 is representative of the group of claims including claims 1, 2, and 6; claim 7 is representative of the group of claims including claims 7-9; claim 14 is representative of the group of claims including claims 14, 15, and 19; claim 20 is representative of the group of claims including claims 20-22; claim 27 is representative of the group of claims including claims 27 and 30; and claim 34 is representative of the group of claims including claims 34-36.

The initial burden of establishing a prima facie basis to deny patentability to a claimed invention is always upon the Examiner. In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In rejecting a claim under 35 U.S.C. § 103, the Examiner must provide a factual basis to support the conclusion of obviousness. In re Warner, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967). Based upon the objective evidence of record, the Examiner is required to make the factual inquiries mandated by Graham v. John Deere Co., 86 S.Ct. 684, 383 U.S. 1, 148 USPQ 459 (1966). The Examiner is also required to explain how and why one having ordinary skill in the art would have been led to modify an applied reference and/or combine applied references to arrive at the claimed invention. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988).

In establishing motivation, it has been consistently held that the requisite motivation to

support the conclusion of obviousness is not an abstract concept, but must stem from the prior art as a whole to impel one having ordinary skill in the art to modify a reference or combine references with a reasonable expectation of successfully achieving some particular realistic objective. See, for example, Interconnect Planning Corp. v. Feil, 227 F.2d 1132, 227 USPQ 543 (Fed. Cir. 1985). Consistent legal precedent admonishes against the indiscriminate combination of prior art references. Carella v. Starlight Archery, 804 F.2d 135, 231 USPQ 644 (Fed. Cir. 1986); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 USPQ 657 (Fed. Cir. 1985).

With these principles in mind, independent claim 1 recites a combination of features of a method for visualizing a network that includes a plurality of nodes. The method includes collecting information from at least one of the nodes, where the information describes network operation over a period of time; reconstructing the network operation for the time period from the collected information; and replaying, for an operator, the network operation as the network operation occurred during the time period using the reconstructed network operation.

Neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests this claimed combination of features. For example, neither Garg et al. nor Robins et al. discloses replaying, for an operator, network operation as the network operation occurred during a time period using reconstructed network operation.

The Examiner addressed this feature for the first time in the Advisory Action, dated November 24, 2003. In the Advisory Action, the Examiner alleged that Garg et al. discloses maintaining configuration data by recordation control 44 through the use of a base configuration table and a configuration log. The Examiner further alleged that by updating configuration log

158 each time the network configuration changes, the combination of configuration log 158 and base configuration table 150 can reconstruct the configuration of the network at previous points in time over a given time period. The Examiner then alleged that since the network can be reconstructed over a time period, it would have been obvious to replay network operation since Garg et al. teaches going backwards in time to show a previous configuration. The Examiner then concluded that with "a reasonable but broad interpretation of 'replaying' such that by going back in time a network operator is able to 'replay' a network operation." The Examiner further alleged that Garg et al. teaches permitting a user to step back or step forward as the network evolves over time which meets a reasonable but broad interpretation of replaying. Appellant respectfully disagrees.

Garg et al. discloses that a prior configuration of the network can be reconstructed using a combination of configuration log 158 and base configuration table 150. Column 12, lines 5-22. At column 12, lines 5-22, Garg et al. discloses:

> By updating configuration log 158 each time the network configuration changes, the combination of configuration log 158 and base configuration table 150 can reconstruct the configuration of the network at previous points in time. Base configuration table 150 provides the "current" configuration, and the appropriate changes can be made to identify a previous network configuration by searching for appropriate entries in configuration log 158.
>
> By way of example, assume that the "current" time is 8:00 a.m. on Jul. 1, 1998. If a user desires to know the configuration of the network on Jan. 1, 1998 at 8:00 a.m., then configuration log 158 need simply be searched for any changes which occurred after Jan. 1, 1998 at 8:00 a.m. By working "backwards" from base configuration table 150, any such identified changes can be "reversed" and a table generated of the network configuration as it existed on Jan. 1, 1998 at 8:00 a.m.

Garg et al. discloses that by working backwards from base configuration table 150 (i.e., the current network configuration) and applying changes that have been recorded in

configuration log 158, "a table [can be] generated of the network configuration as it existed [at some prior time]." Column 12, lines 14-22.

This is very different from what is recited in claim 1. Claim 1 recites replaying network operation as the network operation occurred during a time period. By contrast, Garg et al. discloses that "the present invention stores data such that previous network configurations and/or network operating states can be re-created without requiring storage of substantial amounts of data." Column 13, lines 29-32. Such a recreation of a previous network configuration or network operating state is not equivalent to replaying network operation as the network operation occurred during a time period, as recited in claim 1. The Examiner's unfounded allegation that the two are equivalent lacks merit.

The Examiner's further allegation that Garg et al. teaches permitting a user to step back or step forward as the network evolves over time which meets a reasonable but broad interpretation of replaying also lacks merit. The mere possibility that a user of the system in Garg et al. may recreate a network configuration at a particular point in time and then later recreate a network configuration at a different (later or earlier) point in time is in no way equivalent to replaying network operation as the network operation occurred during a time period.

The disclosure of Robins et al. provides nothing to cure these deficiencies in the disclosure of Garg et al. The Examiner relied on Robins et al. for allegedly disclosing "a motivation of having a switch operator interface 13 with a monitoring node 11" and cited column 5, lines 20-55, of Robins et al. for support. Final Office Action, page 3. While Robins et al. appears to disclose an operator interface 13 that is used for access to

configuration programs running in the switching nodes and that communicates with the switching node 1 (column 4, lines 29-33), nowhere in the section identified by the Examiner, or elsewhere, does Robins et al. disclose or suggest replaying, for an operator, network operation as the network operation occurred during the time period, as recited in claim 1.

Further, the Examiner has failed to provide the requisite motivation for combining the disclosures of Garg et al. and Robins et al. When rejecting a claim under 35 U.S.C. § 103, the Examiner is required to explain how and why one having ordinary skill in the art would have been led to modify an applied reference and/or combine applied references to arrive at the claimed invention. In establishing motivation, it has been consistently held that the requisite motivation to support the conclusion of obviousness is not an abstract concept, but must stem from the prior art as a whole to impel one having ordinary skill in the art to modify a reference or combine references with a reasonable expectation of successfully achieving some particular realistic objective.

The Examiner provided no such motivation. Instead, the Examiner simply alleged that "[a]s both references disclose network communications in general, and more particularly network monitoring of a communications network, examiner notes a motivation to combine the subject matter as a whole for both references." Final Office Action, page 4. This allegation by the Examiner is a mere conclusory statement that fails to explain how and why one having ordinary skill in the art would have been led to combine the applied references. Because the Examiner did not provide the requisite motivation for combining the disclosures of Garg et al. and Robins et al., the Examiner has not established a prima facie case of obviousness with regard to claim 1.

Accordingly, it is respectfully submitted that independent claim 1 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 3 recites obtaining forwarding tables from the nodes. Initially, claim 3 depends from claim 1 and is, therefore, patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 1.

In addition, neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests obtaining forwarding tables from nodes. The Examiner alleged that Garg et al. discloses collecting data in general. Final Office Action, page 4. The Examiner further alleged that it would have been obvious "using a reasonable but broad interpretation of the recited claims to include . . . forwarding tables." Final Office Action, page 4. The Examiner alleged that the motivation is that forwarding tables are part of configuration information as is known in the art. Final Office Action, pages 4-5. Appellant respectfully disagrees and submits that the Examiner has provided absolutely no evidence that forwarding tables are well known types of configuration information.

Further, Garg et al. discloses types of configuration data that are collected, but makes no mention of forwarding tables or anything similar to forwarding tables. At column 11, lines 32-48, Garg et al. discloses:

> Configuration data is periodically received from data collection module 30 of FIG. 1 and is used to update the base table as necessary, block 146. Base configuration table 150 of FIG. 15 illustrates a base configuration table according to one embodiment of the present invention. Base configuration table 150 provides a "snapshot" of the current network configuration (that is, the network configuration as last identified by data collection

> module 30). Base configuration table 150 includes one row for each of the possible devices in the network environment (column 152) and maintains, .multiple (.times.) configuration parameters for each device (columns 154). The parameters maintained in columns 154 are those that are obtained, either directly or indirectly, by data collection module 30. Examples of such parameters include, but are not limited to, amount of memory, operating speed, operational and/or administrative status, operating system type and/or version, etc.

(emphasis added). Contrary to the Examiner's allegation, Garg et al. does not contemplate obtaining forwarding tables from the devices.

The Examiner further noted that Robins et al. "provides further support" by disclosing an event log, an alarm table, topology data, and general database information. Final Office Action, page 5. While Robins et al. appears to disclose the information identified by the Examiner, Robins et al. does not disclose or suggest obtaining forwarding tables from nodes, as recited in claim 3.

Even if Robins et al. did disclose obtaining forwarding tables (which Appellant submits that Robins et al. does not), the Examiner provided no motivation for combining this feature with the disclosure of Garg et al. Therefore, the Examiner has not established a prima facie case of obviousness with regard to claim 3.

Accordingly, it is respectfully submitted that dependent claim 3 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 7 recites displaying the network operation to the operator as an interactive network topology diagram. Initially, claim 7 depends from claim 1 and is, therefore, patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 1.

In addition, neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests displaying the network operation to the operator as an interactive network topology diagram. The Examiner alleged that Garg et al. discloses updating the configuration log each time a configuration changes, where the configuration table can be reconstructed at a previous point in time. Final Office Action, page 5. This allegation, however, in no way addresses the features of claim 7. Because the Examiner did not address the features of claim 7, the Examiner has not established a prima facie case of obviousness with regard to claim 7.

Accordingly, it is respectfully submitted that dependent claim 7 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 10 recites displaying the network operation to the operator and permitting the operator to manipulate the displaying of the network operation. Initially, claim 10 depends from claim 1 and is, therefore, patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 1.

In addition, neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests permitting an operator to manipulate the displaying of the network operation. The Examiner alleged that Robins et al. discloses allowing an operation to display detailed information regarding a network operation as well as displaying detailed information regarding a node, link, or message. Final Office Action, page 5. The Examiner further alleged that "this is the same information that is stored in configuration tables" as

disclosed by Garg et al. Final Office Action, page 5.

Regardless of the accuracy of the Examiner's allegations, the Examiner has not addressed the features of claim 10. For example, the Examiner has not alleged that either Garg et al. or Robins et al. discloses or suggests permitting an operator to manipulate the displaying of network operation, as recited in claim 10. For at least this reason, the Examiner has not established a prima facie case of obviousness with regard to claim 10.

Even, assuming for the sake of argument, that Robins et al. can reasonably be construed to disclose permitting an operator to manipulate the displaying of the network operation, the Examiner did not provide proper motivation for combining this feature with the disclosure of Garg et al. The Examiner stated "the motivation for combining the references is taught in the reasoning for claim 1 above." Final Office Action, page 5. With regard to claim 1, the Examiner alleged that "[a]s both references disclose network communications in general, and more particularly network monitoring of a communications network, examiner notes a motivation to combine the subject matter as a whole for both references." Final Office Action, page 4. This allegation by the Examiner is a mere conclusory statement that fails to logically explain how and why one having ordinary skill in the art would have been led to modify the Garg et al. system to permit an operator to manipulate the display of network operation. Because the Examiner did not provide the requisite motivation for combining the disclosures of Garg et al. and Robins et al., the Examiner has not established a prima facie case of obviousness with regard to claim 10.

Accordingly, it is respectfully submitted that dependent claim 10 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 11 recites permitting the operator to manipulate the replaying of the network operation. Initially, claim 11 depends from claim 1 and is, therefore, patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 1.

In addition, neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests permitting the operator to manipulate the replaying of the network operation. The Examiner alleged that Garg et al. discloses updating the configuration log each time a configuration changes, where the configuration table can be reconstructed at a previous point in time. Final Office Action, page 5. This allegation in now way addresses the features of claim 11. Because the Examiner did not address the features of claim 11, the Examiner has not established a prima facie case of obviousness with regard to claim 11.

Accordingly, it is respectfully submitted that dependent claim 11 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Independent claim 13 recites a combination of features of a system for visualizing a network that includes a plurality of nodes. The system includes means for collecting information from at least one of the nodes, where the information describes network operation over a period of time. The system also includes means for reconstructing the network operation for the time period from the collected information and means for replaying the reconstructed network operation over the time period for an operator.

Neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests this claimed combination of features. For example, neither

Garg et al. nor Robins et al. discloses or suggests means for replaying the reconstructed network operation over the time period for an operator.

The Examiner addressed this feature for the first time in the Advisory Action, dated November 24, 2003, when addressing a similar feature recited in claim 1. In the Advisory Action, the Examiner alleged that Garg et al. discloses maintaining configuration data by recordation control 44 through the use of a base configuration table and a configuration log. The Examiner further alleged that by updating configuration log 158 each time the network configuration changes, the combination of configuration log 158 and base configuration table 150 can reconstruct the configuration of the network at previous points in time over a given time period. The Examiner then alleged that since the network can be reconstructed over a time period, it would have been obvious to replay network operation since Garg et al. teaches going backwards in time to show a previous configuration. The Examiner then concluded that with "a reasonable but broad interpretation of 'replaying' such that by going back in time a network operator is able to 'replay' a network operation." The Examiner further alleged that Garg et al. teaches permitting a user to step back or step forward as the network evolves over time which meets a reasonable but broad interpretation of replaying. Appellant respectfully disagrees.

Garg et al. discloses that a prior configuration of the network can be reconstructed using a combination of configuration log 158 and base configuration table 150. Column 12, lines 5-22. Garg et al. discloses that by working backwards from base configuration table 150 (i.e., the current network configuration) and applying changes that have been recorded in configuration log 158, "a table [can be] generated of the network configuration as it existed [at some prior time]." Column 12, lines 14-22.

This is very different from what is recited in claim 13. Claim 13 recites means for replaying the reconstructed network operation over the time period for an operator. By contrast, Garg et al. discloses that "the present invention stores data such that previous network configurations and/or network operating states can be re-created without requiring storage of substantial amounts of data." Column 13, lines 29-32. Such a recreation of a previous network configuration or network operating state is not equivalent to replaying a reconstructed network operation over a time period for an operator, as recited in claim 13. The Examiner's unfounded allegation that the two are equivalent lacks merit.

The Examiner's further allegation that Garg et al. teaches permitting a user to step back or step forward as the network evolves over time which meets a reasonable but broad interpretation of replaying also lacks merit. The mere possibility that a user of the system in Garg et al. may recreate a network configuration at a particular point in time and then later recreate a network configuration at a different (later or earlier) point in time is in no way equivalent to replaying the reconstructed network operation over the time period for an operator, as recited in claim 13.

The disclosure of Robins et al. provides nothing to cure these deficiencies in the disclosure of Garg et al. The Examiner relied on Robins et al. for allegedly disclosing "a motivation of having a switch operator interface 13 with a monitoring node 11" and cited column 5, lines 20-55, of Robins et al. for support. Final Office Action, page 3. While Robins et al. appears to disclose an operator interface 13 that is used for access to configuration programs running in the switching nodes and that communicates with the

switching node 1 (column 4, lines 29-33), nowhere in the section identified by the Examiner, or elsewhere, does Robins et al. disclose or suggest means for replaying the reconstructed network operation over the time period for an operator, as recited in claim 13.

Further, the Examiner has failed to provide the requisite motivation for combining the disclosures of Garg et al. and Robins et al. When rejecting a claim under 35 U.S.C. § 103, the Examiner is required to explain how and why one having ordinary skill in the art would have been led to modify an applied reference and/or combine applied references to arrive at the claimed invention. In establishing motivation, it has been consistently held that the requisite motivation to support the conclusion of obviousness is not an abstract concept, but must stem from the prior art as a whole to impel one having ordinary skill in the art to modify a reference or combine references with a reasonable expectation of successfully achieving some particular realistic objective.

The Examiner provided no such motivation. Instead, the Examiner simply alleged that "[a]s both references disclose network communications in general, and more particularly network monitoring of a communications network, examiner notes a motivation to combine the subject matter as a whole for both references. Final Office Action, page 4. This allegation by the Examiner is a mere conclusory statement that fails to logically explain how and why one having ordinary skill in the art would have been led to combine the applied references. Because the Examiner did not provide the requisite motivation for combining the disclosures of Garg et al. and Robins et al., the Examiner has failed to establish a prima facie case of obviousness with regard to claim 13.

Accordingly, it is respectfully submitted that independent claim 13 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Independent claim 14 recites a combination of features of a system for visualizing a network that includes a plurality of nodes. The system includes a memory that stores instructions and a processor that is configured to execute the instructions in the memory. The processor is configured to collect information from at least one of the nodes, where the information describes network operation over a period of time. The processor is further configured to reconstruct the network operation for the time period from the collected information, and cause the network operation to be displayed, for an operator, as the network operation occurred during the time period using the reconstructed network operation.

Neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests this claimed combination of features. For example, neither Garg et al. nor Robins et al. discloses a processor that is configured to cause network operation to be displayed, for an operator, as the network operation occurred during a time period using reconstructed network operation.

The Examiner addressed this feature for the first time in the Advisory Action, dated November 24, 2003, when addressing a similar feature recited in claim 1. In the Advisory Action, the Examiner alleged that Garg et al. discloses maintaining configuration data by recordation control 44 through the use of a base configuration table and a configuration log. The Examiner further alleged that by updating configuration log 158 each time the network configuration changes, the combination of configuration log 158 and base configuration table

150 can reconstruct the configuration of the network at previous points in time over a given time period. The Examiner then alleged that since the network can be reconstructed over a time period, it would have been obvious to replay network operation since Garg et al. teaches going backwards in time to show a previous configuration. The Examiner then concluded that with "a reasonable but broad interpretation of 'replaying' such that by going back in time a network operator is able to 'replay' a network operation." The Examiner further alleged that Garg et al. teaches permitting a user to step back or step forward as the network evolves over time which meets a reasonable but broad interpretation of replaying. Appellant respectfully disagrees.

Garg et al. discloses that a prior configuration of the network can be reconstructed using a combination of configuration log 158 and base configuration table 150. Column 12, lines 5-22. Garg et al. discloses that by working backwards from base configuration table 150 (i.e., the current network configuration) and applying changes that have been recorded in configuration log 158, "a table [can be] generated of the network configuration as it existed [at some prior time]." Column 12, lines 14-22.

This is very different from what is recited in claim 14. Claim 14 recites a processor that is configured to cause network operation to be displayed, for an operator, as the network operation occurred during a time period using reconstructed network operation. By contrast, Garg et al. discloses that "the present invention stores data such that previous network configurations and/or network operating states can be re-created without requiring storage of substantial amounts of data." Column 13, lines 29-32. Such a recreation of a previous network configuration or network operating state is not equivalent to causing network operation to be displayed, for an operator, as the network

operation occurred during a time period using reconstructed network operation, as recited in claim 14. The Examiner's unfounded allegation that the two are equivalent lacks merit.

The Examiner's further allegation that Garg et al. teaches permitting a user to step back or step forward as the network evolves over time which meets a reasonable but broad interpretation of replaying also lacks merit. The mere possibility that a user of the system in Garg et al. may recreate a network configuration at a particular point in time and then later recreate a network configuration at a different (later or earlier) point in time is in no way equivalent to causing network operation to be displayed, for an operator, as the network operation occurred during a time period using reconstructed network operation, as recited in claim 14.

The disclosure of Robins et al. provides nothing to cure these deficiencies in the disclosure of Garg et al. The Examiner relied on Robins et al. for allegedly disclosing "a motivation of having a switch operator interface 13 with a monitoring node 11" and cited column 5, lines 20-55, of Robins et al. for support. Final Office Action, page 3. While Robins et al. appears to disclose an operator interface 13 that is used for access to configuration programs running in the switching nodes and that communicates with the switching node 1 (column 4, lines 29-33), nowhere in the section identified by the Examiner, or elsewhere, does Robins et al. disclose or suggest a processor that is configured to cause network operation to be displayed, for an operator, as the network operation occurred during a time period using reconstructed network operation, as recited in claim 14.

Further, the Examiner has failed to provide the requisite motivation for combining

the disclosures of Garg et al. and Robins et al. When rejecting a claim under 35 U.S.C. § 103, the Examiner is required to explain how and why one having ordinary skill in the art would have been led to modify an applied reference and/or combine applied references to arrive at the claimed invention. In establishing motivation, it has been consistently held that the requisite motivation to support the conclusion of obviousness is not an abstract concept, but must stem from the prior art as a whole to impel one having ordinary skill in the art to modify a reference or combine references with a reasonable expectation of successfully achieving some particular realistic objective.

The Examiner provided no such motivation. Instead, the Examiner simply alleged that "[a]s both references disclose network communications in general, and more particularly network monitoring of a communications network, examiner notes a motivation to combine the subject matter as a whole for both references. Final Office Action, page 4. This allegation by the Examiner is a mere conclusory statement that fails to logically explain how and why one having ordinary skill in the art would have been led to combine the applied references. Because the Examiner did not provide the requisite motivation for combining the disclosures of Garg et al. and Robins et al., the Examiner has failed to establish a prima facie case of obviousness with regard to claim 14.

Accordingly, it is respectfully submitted that independent claim 14 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 16 recites that the processor is configured to obtain forwarding tables from the nodes. Initially, claim 16 depends from claim 14 and is, therefore, patentable over Garg

et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 14. Also, claim 16 recites features similar to features recited in claim 3. Therefore, claim 16 is also patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 3.

Accordingly, it is respectfully submitted that dependent claim 16 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 20 recites that the processor is configured to present the reconstructed network operation to the operator as an interactive network topology diagram. Initially, claim 20 depends from claim 14 and is, therefore, patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 14. Claim 20 also recites features similar to features described above with regard to claim 7. Therefore, claim 20 is also patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 7.

Accordingly, it is respectfully submitted that dependent claim 20 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 23 recites that the processor is configured to permit the operator to manipulate the displaying of the network operation. Initially, claim 23 depends from claim 14 and is, therefore, patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 14. Claim 23 also

recites features similar to features described above with regard to claim 10. Therefore, claim 23 is also patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 10.

Accordingly, it is respectfully submitted that dependent claim 23 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 24 recites that the processor is configured to replay the network operation over the time period and permit the operator to manipulate the replaying of the network operation. Initially, claim 24 depends from claim 14 and is, therefore, patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 14. Claim 24 also recites features similar to features described above with regard to claim 11. Therefore, claim 24 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 11.

Accordingly, it is respectfully submitted that dependent claim 24 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Independent claim 26 recites a combination of features of a computer-readable medium that stores instructions for causing at least one processor to perform a method for visualizing a network that includes a plurality of nodes. The computer-readable medium includes instructions for collecting information from at least one of the nodes, where the information describes network operation over a period of time; instructions for reconstructing the network operation for

the time period from the collected information; and instructions for presenting, to an operator, the network operation as the network operation evolved over time during the time period using the reconstructed network operation.

Neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests this claimed combination of features. For example, neither Garg et al. nor Robins et al. discloses or suggests instructions for presenting, to an operator, network operation as the network operation evolved over time during a time period using reconstructed network operation.

The Examiner addressed this feature for the first time in the Advisory Action, dated November 24, 2003, when addressing a similar feature recited in claim 1. In the Advisory Action, the Examiner alleged that Garg et al. discloses maintaining configuration data by recordation control 44 through the use of a base configuration table and a configuration log. The Examiner further alleged that by updating configuration log 158 each time the network configuration changes, the combination of configuration log 158 and base configuration table 150 can reconstruct the configuration of the network at previous points in time over a given time period. The Examiner then alleged that since the network can be reconstructed over a time period, it would have been obvious to replay network operation since Garg et al. teaches going backwards in time to show a previous configuration. The Examiner then concluded that with "a reasonable but broad interpretation of 'replaying' such that by going back in time a network operator is able to 'replay' a network operation." The Examiner further alleged that Garg et al. teaches permitting a user to step back or step forward as the network evolves over time which meets a reasonable but broad interpretation of replaying. Appellant respectfully disagrees.

Garg et al. discloses that a prior configuration of the network can be reconstructed using a combination of configuration log 158 and base configuration table 150. Column 12, lines 5-22. Garg et al. discloses that by working backwards from base configuration table 150 (i.e., the current network configuration) and applying changes that have been recorded in configuration log 158, "a table [can be] generated of the network configuration as it existed [at some prior time]." Column 12, lines 14-22.

This is very different from what is recited in claim 26. Claim 26 recites instructions for presenting, to an operator, the network operation as the network operation evolved over time during the time period using the reconstructed network operation. By contrast, Garg et al. discloses that "the present invention stores data such that previous network configurations and/or network operating states can be re-created without requiring storage of substantial amounts of data." Column 13, lines 29-32. Such a recreation of a previous network configuration or network operating state is not equivalent to presenting, to an operator, network operation as the network operation evolved over time during a time period using reconstructed network operation, as recited in claim 26. The Examiner's unfounded allegation that the two are equivalent lacks merit.

The Examiner's further allegation that Garg et al. teaches permitting a user to step back or step forward as the network evolves over time which meets a reasonable but broad interpretation of replaying also lacks merit. The mere possibility that a user of the system in Garg et al. may recreate a network configuration at a particular point in time and then later recreate a network configuration at a different (later or earlier) point in time is in no way equivalent to presenting, to an operator, network operation as the network

operation evolved over time during a time period using reconstructed network operation, as recited in claim 26.

The disclosure of Robins et al. provides nothing to cure these deficiencies in the disclosure of Garg et al. The Examiner relied on Robins et al. for allegedly disclosing "a motivation of having a switch operator interface 13 with a monitoring node 11" and cited column 5, lines 20-55, of Robins et al. for support. Final Office Action, page 3. While Robins et al. appears to disclose an operator interface 13 that is used for access to configuration programs running in the switching nodes and that communicates with the switching node 1 (column 4, lines 29-33), nowhere in the section identified by the Examiner, or elsewhere, does Robins et al. disclose or suggest instructions for presenting, to an operator, network operation as the network operation evolved over time during a time period using reconstructed network operation, as recited in claim 26.

Further, the Examiner has failed to provide the requisite motivation for combining the disclosures of Garg et al. and Robins et al. When rejecting a claim under 35 U.S.C. § 103, the Examiner is required to explain how and why one having ordinary skill in the art would have been led to modify an applied reference and/or combine applied references to arrive at the claimed invention. In establishing motivation, it has been consistently held that the requisite motivation to support the conclusion of obviousness is not an abstract concept, but must stem from the prior art as a whole to impel one having ordinary skill in the art to modify a reference or combine references with a reasonable expectation of successfully achieving some particular realistic objective.

The Examiner provided no such motivation. Instead, the Examiner simply alleged that

"[a]s both references disclose network communications in general, and more particularly network monitoring of a communications network, examiner notes a motivation to combine the subject matter as a whole for both references. Final Office Action, page 4. This allegation by the Examiner is a mere conclusory statement that fails to logically explain how and why one having ordinary skill in the art would have been led to combine the applied references. Because the Examiner did not provide the requisite motivation for combining the disclosures of Garg et al. and Robins et al., the Examiner has failed to establish a prima facie case of obviousness with regard to claim 26.

Accordingly, it is respectfully submitted that independent claim 26 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Independent claim 27 recites a combination of features of a computer-readable memory device of a node in a network containing a network operations data structure. The memory includes a first area that stores information regarding node status changes; a second area that stores information regarding messages received and transmitted by the node; and a third area that stores information regarding link status changes in the network.

Neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests these features. When rejecting claim 27, the Examiner simply alleged "using a reasonable but broad interpretation of 'area' Garg discloses all three areas as shown in figure 3." Final Office Action, page 5. The Examiner also alleged that Robins et al. discloses a motivation of having a switch operator interface with a monitoring node. Final Office Action, pages 5-6. The feature for which the Examiner is relying on Robins et al. is not recited

in claim 27. Therefore, the Examiner appears to be alleging that Garg et al. anticipates the claim, instead of relying on a combination of Garg et al. and Robins et al. in an obviousness rejection. Further, the Examiner did not establish a prima facie case of obviousness with regard to claim 27 if the Examiner is relying on a combination of Garg et al. and Robins et al. because the Examiner provided no motivation statement for combining the alleged teachings of Garg et al. and Robins et al.

In the After Final Request for Reconsideration, filed October 10, 2003, Appellant requested clarification of the grounds of rejection with regard to claim 27. In the Advisory Action, dated November 24, 2003, the Examiner stated:

> As to claim 27, figure 3 of Garg et al. discloses the data reduction module 32 of figure 2. In particular, figure 3 shows "areas" of performance and configuration information for recording. Examples of information stored are mentioned at column 4, lines 20-35 and column 11, lines 45-48. One skilled in the art would have been motivated to find "node status" and "link status" as part of the description found at column 4, lines 20-35 and column 11, lines 45-48.

It appears that the Examiner is confirming that the Examiner believes that Garg et al. anticipates claim 27. Appellant disagrees.

In Fig. 3, Garg et al. illustrates the data reduction module. At column 5, lines 37-46, Garg et al. describes Fig. 3 as:

> FIG. 3 illustrates a data reduction module 32 according to one embodiment of the present invention. Reduction module 32 includes performance recordation control 42 to generate and update as necessary the various tables and logs maintained for storage of information regarding network performance in accordance with the present invention. Reduction module 32 also includes configuration recordation control 44 to generate and update as necessary the various tables and logs maintained for storage of information regarding network configuration in accordance with the present invention.

Nowhere in this section does Garg et al. disclose or suggest the first, second, and third areas recited in claim 27.

At column 4, lines 20-35, and column 11, lines 45-48, Garg et al. discloses:

> FIG. 2 illustrates an embodiment of a network monitor 22 capable of detecting problems or potential problems in a network environment. Network monitor 22 includes a data collection module 30 that collects information from various devices or applications, such as information regarding network utilization (or device utilization), lost packets, response time, number of errors, device configuration, etc. Data collection module 30 collects information regarding the operation or performance of the network environment on one or more communication links 31. Data collection module 30 can collect data from any number of networks and any number of network devices or applications. Data collection module 30 is coupled to a data reduction module 32, which reduces the collected data by reducing the granularity of the data over time and performing statistical reduction of the data, as discussed in more detail below.
>
> Examples of such parameters include, but are not limited to, amount of memory, operating speed, operational and/or administrative status, operating system type and/or version, etc.

In the first section above, Garg et al. discloses that data collection module 30 collects information from various devices or applications, such as information regarding network utilization (or device utilization), lost packets, response time, number of errors, and device configuration. Garg et al. also discloses that data collection module 30 collects information regarding operation or performance on one or more communication links. In the second section, Garg et al. discloses examples of parameters that are stored in base configuration table 150 of data collection module 30, including the amount of memory, operating speed, operational and/or administrative status, operating system type and/or version of devices in the network.

Also, in Figs. 5-8, 10, 11, 15, and 16, Garg et al. illustrates various tables provided in the system. It is important to note that all of this information, including the information stored in the other various tables of network monitor 22 (see, e.g., Figs. 5-8, 10, 11, 15, and 16 of Garg et al.), is stored by network monitor 22 of Garg et al. and that none of this information corresponds to information regarding the operation of network monitor 22. See, generally, column 5, lines 37-46, and column 6, lines 17-24.

By contrast, claim 27 is directed to a computer-readable memory device of a node in a network that includes, for example, a first area that stores information regarding node status changes and a second area that stores information regarding messages received and transmitted by the node. Garg et al. does not disclose such first and second areas. In other words, if network monitor 12 of Garg et al. is alleged to be the equivalent of the node recited in claim 27, none of the information in the tables in Garg et al. includes information regarding status changes of the network monitor or information regarding messages received and transmitted by the network monitor. The disclosure of Robins et al. does not cure these deficiencies in the disclosure of Garg et al.

Accordingly, it is respectfully submitted that independent claim 27 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 28 recites that the node status change information includes information regarding state changes of the node and time stamps indicating times corresponding to the state changes. Initially, claim 28 depends from claim 27 and is, therefore, patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 27.

In addition, neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests node status change information that includes information regarding state changes of the node and time stamps indicating times corresponding to the state changes. The Examiner alleged that in Figs. 5-10, Garg et al. discloses using time stamps for storing data with respect to node status changes, messages received and transmitted, and link

status. Final Office Action, page 6. Appellant disagrees.

As explained above with regard to claim 27, Garg et al. does not disclose or suggest a computer-readable memory device of a node that includes a first area that stores information regarding status changes of the node. Therefore, Garg et al. cannot disclose or suggest that the node status change information includes information regarding state changes of the node and time stamps indicating times corresponding to the state changes. Instead, Garg et al. collects various information concerning other devices and applications in the network. Column 4, lines 20-35. The disclosure of Robins et al. does not cure these deficiencies in the disclosure of Garg et al.

Accordingly, it is respectfully submitted that dependent claim 28 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 29 recites that the message information includes information regarding messages transmitted or received by the node and time stamps indicating times corresponding to the transmission or reception of the messages by the node. Initially, claim 29 depends from claim 27 and is, therefore, patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 27.

In addition, neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests message information that includes information regarding messages transmitted or received by the node and time stamps indicating times corresponding to the transmission or reception of the messages by the node. The Examiner alleged that in Figs. 5-10, Garg et al. discloses using time stamps for storing data with respect to node status changes,

messages received and transmitted, and link status. Final Office Action, page 6. Appellant disagrees.

As explained above with regard to claim 27, Garg et al. does not disclose or suggest a computer-readable memory device of a node that includes a second area that stores information regarding messages received and transmitted by the node. Therefore, Garg et al. cannot disclose or suggest that the message information includes information regarding messages transmitted or received by the node and time stamps indicating times corresponding to the transmission or reception of the messages by the node. Instead, Garg et al. collects various information concerning other devices and applications in the network. Column 4, lines 20-35. The disclosure of Robins et al. does not cure these deficiencies in the disclosure of Garg et al.

Accordingly, it is respectfully submitted that dependent claim 29 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 31 recites a fourth area that stores a forwarding table for the node. Initially, claim 31 depends from claim 27 and is, therefore, patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 27.

In addition, neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests a fourth area that stores a forwarding table for the node. The Examiner did not address this feature of claim 31. Therefore, the Examiner did not establish a prima facie case of obviousness with regard to claim 31.

Accordingly, it is respectfully submitted that dependent claim 31 is patentable over Garg

et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Independent claim 32 receives a combination of features of an interactive graphical user interface for visualizing a network having a plurality of nodes. The graphical user interface includes a network topology diagram configured to display at least some of the nodes, links connecting the nodes, and messages transmitted through the network and replay controls that permit an operator to control a replay sequence of the network as the network operates over a period of time.

Neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests these features. For example, neither Garg et al. nor Robins et al. discloses or suggests replay controls that permit an operator to control a replay sequence of a network as the network operates over a time period.

The Examiner alleged that Garg et al. discloses that the network monitor can be a computer system with a video display used to display various information and data to a user of the computer system. Final Office Action, page 6. The Examiner then concluded that such a disclosure means that Garg et al. discloses an interactive graphical user interface for visualizing a network interface having a plurality of nodes and replay controls. Final Office Action, page 6. The Examiner relied on Robins et al. for also disclosing a network topology. Final Office Action, page 6. Appellant respectfully disagrees.

Contrary to the Examiner's allegation, Garg et al. does not disclose, suggest, or imply replay controls that permit an operator to control a replay sequence of a network as the network operates over a time period. The Examiner provided no evidence to support the unfounded

allegation that Garg et al. discloses such replay controls.

Further, the Examiner rejected claim 32 based on a combination of Garg et al. and Robins et al., but the Examiner failed to provide the requisite motivation for combining the alleged teachings of these two references. Because the Examiner provided no motivation for combining the alleged teachings of Garg et al. and Robins et al., the Examiner not established a prima facie case of obviousness with regard to claim 32.

Accordingly, it is respectfully submitted that independent claim 32 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Independent claim 34 recites a combination of features of a method for visualizing a network having a plurality of nodes. The method includes recording network events by one or more of the nodes over a period of time, collecting the recorded events from the nodes, recreating operation of the network over the time period from the recorded events, and displaying the recreated network operation.

Neither Garg et al. nor Robins et al., whether taken alone or in any reasonable combination, discloses or suggests this combination of features. For example, neither Garg et al. nor Robins et al. discloses or suggests recreating operation of a network over a time period from recorded events and displaying the recreated network operation. The Examiner did not address these features of claim 34. Therefore, the Examiner did not establish a prima facie case of obviousness with regard to claim 34.

Further, Garg et al. discloses that a prior configuration of the network can be reconstructed using a combination of configuration log 158 and base configuration table

150. Column 12, lines 5-22. Garg et al. discloses that by working backwards from base configuration table 150 (i.e., the current network configuration) and applying changes that have been recorded in configuration log 158, "a table [can be] generated of the network configuration as it existed [at some prior time]." Column 12, lines 14-22.

This is very different from what is recited in claim 34. Claim 34 recites recreating operation of a network over a time period from recorded events and displaying the recreated network operation. By contrast, Garg et al. discloses that "the present invention stores data such that previous network configurations and/or network operating states can be re-created without requiring storage of substantial amounts of data." Column 13, lines 29-32. Such a recreation of a previous network configuration or network operating state is not equivalent to recreating operation of a network over a time period from recorded events and displaying the recreated network operation, as recited in claim 34.

The disclosure of Robins et al. provides nothing to cure these deficiencies in the disclosure of Garg et al. The Examiner relied on Robins et al. for allegedly disclosing "a motivation of having a switch operator interface 13 with a monitoring node 11" and cited column 5, lines 20-55, of Robins et al. for support. Final Office Action, page 6. While Robins et al. appears to disclose an operator interface 13 that is used for access to configuration programs running in the switching nodes and that communicates with the switching node 1 (column 4, lines 29-33), nowhere in the section identified by the Examiner, or elsewhere, does Robins et al. disclose or suggest recreating operation of a network over a time period from recorded events and displaying the recreated network operation, as recited in claim 34.

Further, the Examiner has failed to provide the requisite motivation for combining the disclosures of Garg et al. and Robins et al. Because the Examiner provided no motivation for combining the alleged teachings of Garg et al. and Robins et al., the Examiner not established a prima facie case of obviousness with regard to claim 34.

Accordingly, it is respectfully submitted that dependent claim 34 is patentable over Garg et al. and Robins et al., whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

B. The rejection of claims 4, 5, 17, and 18 under 35 U.S.C. § 103(a) as unpatentable over the Garg et al. reference (U.S. Patent No. 6,453,346) and the Robins et al. reference (U.S. Patent No. 5,049,873) in view of the Feldmann reference (U.S. Patent Application Publication No. US 2002/0021675 A1) should be REVERSED.

Claims 4, 5, 17, and 18 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al. and Robins et al. in view of Feldmann.

Dependent claim 4 recites creating forwarding tables from the collected information. Initially, claim 4 depends from claim 3. The disclosure of Feldmann fails to cure the deficiencies in the disclosures of Garg et al. and Robins et al. described above with regard to claim 3. Claim 4 is, therefore, patentable over Garg et al., Robins et al., and Feldmann, whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 3.

In addition, neither Garg et al., Robins et al., nor Feldmann, whether taken alone or in any reasonable combination, discloses or suggests creating forwarding tables from the collected

information, as recited in claim 4. Instead, Feldmann discloses collecting router configuration files. Page 1, paragraph 0010. Feldmann does not disclose or suggest, however, creating forwarding tables from information collected from the routers (nodes).

Even if Feldmann did disclose creating forwarding tables from information collected from the nodes (which Appellant submits that Feldmann does not), the Examiner failed to provide the requisite motivation for combining this alleged feature of Feldmann with the disclosures of Garg et al. and Robins et al. The Examiner alleged that Feldmann discloses network communication in general, as does Garg et al. and Robins et al., and more specifically collecting configuration information for the purposes of debugging a network problem, thus, "creating a motivation to combine the subject matter as a whole for all three references." Final Office Action, page 7.

This allegation by the Examiner is a mere conclusory statement that fails to logically explain how and why one having ordinary skill in the art would have been led to combine the applied references. Because the Examiner did not provide the requisite motivation for combining the disclosures of Garg et al., Robins et al., and Feldmann, the Examiner has not established a prima facie case of obviousness with regard to claim 4.

Accordingly, it is respectfully submitted that dependent claim 4 is patentable over Garg et al., Robins et al., and Feldmann, whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 5 recites comparing the forwarding tables obtained from the nodes to the created forwarding tables and measuring routing protocol convergence time based on the comparison. Initially, claim 5 depends from claim 4. Claim 5 is, therefore, patentable over Garg

et al., Robins et al., and Feldmann, whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 4.

In addition, neither Garg et al., Robins et al., nor Feldmann, whether taken alone or in any reasonable combination, discloses or suggests measuring routing protocol convergence time based on a comparison of the forwarding tables obtained from the nodes to the created forwarding tables. The Examiner did not address this feature and, therefore, did not establish a prima facie case of obviousness with regard to claim 5.

Accordingly, it is respectfully submitted that dependent claim 5 is patentable over Garg et al., Robins et al., and Feldmann, whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 17 recites that the processor is configured to create forwarding tables from the collected information. Initially, claim 17 depends from claim 16. The disclosure of Feldmann fails to cure the deficiencies in the disclosures of Garg et al. and Robins et al. described above with regard to claim 16. Claim 17 is, therefore, patentable over Garg et al., Robins et al., and Feldmann, whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 16. Claim 17 also recites features similar to features described above with regard to claim 4. Claim 17 is, therefore, also patentable over Garg et al., Robins et al., and Feldmann, whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 4.

Accordingly, it is respectfully submitted that dependent claim 17 is patentable over Garg et al., Robins et al., and Feldmann, whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 18 recites that the processor is configured to compare the forwarding tables obtained from the nodes to the created forwarding tables, and measure routing protocol convergence time based on the comparison. Initially, claim 18 depends from claim 17. Claim 18 is, therefore, patentable over Garg et al., Robins et al., and Feldmann, whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 17. Claim 18 also recites features similar to features described above with regard to claim 5. Claim 18 is, therefore, also patentable over Garg et al., Robins et al., and Feldmann, whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 5.

Accordingly, it is respectfully submitted that dependent claim 18 is patentable over Garg et al., Robins et al., and Feldmann, whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

C. The rejection of claims 12, 25, and 33 under 35 U.S.C. § 103(a) as unpatentable over the Garg et al. reference (U.S. Patent No. 6,453,346) and the Robins et al. reference (U.S. Patent No. 5,049,873) in view of the Lane reference (U.S. Patent No. 5,437,009) should be REVERSED.

Claims 12, 25, and 33 stand finally rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al. and Robins et al. in view of Lane.

Dependent claim 12 recites allowing the operator to at least one of fast forward and rewind the replaying of the network operation. Initially, claim 12 depends from claim 11. The disclosure of Lane fails to cure the deficiencies in the disclosures of Garg et al. and Robins et al. described above with regard to claim 11. Claim 12 is, therefore, patentable over Garg et al.,

Robins et al., and Lane, whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 11.

In addition, neither Garg et al., Robins et al., nor Lane, whether taken alone or in any reasonable combination, discloses or suggests allowing an operator to at least one of fast forward and rewind the replaying of the network operation. The Examiner alleged that Garg et al. discloses walking through the monitored system based on time by going either backwards or forwards. Final Office Action, page 7. Appellant disagrees. Contrary to the Examiner's allegation, Garg et al. does not disclose "walking through the monitored system." Instead, Garg et al. discloses recreating a previous network configuration or network operating state. Column 13, lines 29-32.

The Examiner alleged that it would have been obvious to allow the operator to also fast-forward and rewind the replay operation. Final Office Action, page 8. The Examiner alleged that this would permit an operator to see events happen as they occur in time, "which is generally taught by Garg." Final Office Action, page 8. Appellant again respectfully disagrees. The disclosure of Garg et al. provides no support for the Examiner's unfounded allegations. In other words, Garg et al. does not disclose, suggest, or imply permitting an operator to fast-forward or rewind a replay operation. This is evidenced by the fact that Garg et al. does not disclose or suggest a replay operation, but instead discloses recreating a previous network configuration or network operating state. Column 13, lines 29-32.

The Examiner also relied on Lane for allegedly disclosing "ways of searching network information stored such as a forward play and backward play using a reasonable but broad interpretation of the recited claimed subject matter." Final Office Action, page 8. The Examiner

failed to provide, however, the requisite motivation for combining this alleged feature of Lane with the disclosures of Garg et al. and Robins et al. The Examiner alleged that Lane discloses network communication in general, as does Garg et al. and Robins et al., and more specifically collecting configuration information using the SEAS system for the purposes of debugging a network problem, thus, "creating a motivation to combine the subject matter as a whole for all three references." Final Office Action, page 8.

This allegation by the Examiner is a mere conclusory statement that fails to logically explain how and why one having ordinary skill in the art would have been led to combine the applied references. Because the Examiner did not provide the requisite motivation for combining the disclosures of Garg et al., Robins et al., and Lane, the Examiner has not established a prima facie case of obviousness with regard to claim 12.

Accordingly, it is respectfully submitted that dependent claim 12 is patentable over Garg et al., Robins et al., and Lane, whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 25 recites that the processor is configured to allow the operator to at least one of fast forward and rewind the replaying of the network operation. Initially, claim 25 depends from claim 24. The disclosure of Lane fails to cure the deficiencies in the disclosures of Garg et al. and Robins et al. described above with regard to claim 24. Claim 25 is, therefore, patentable over Garg et al., Robins et al., and Lane, whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 24. Claim 25 also recites features similar to features described above with regard to claim 12. Claim 25 is, therefore, also patentable over Garg et al., Robins et al., and Lane, whether taken alone or in any reasonable

combination, for reasons similar to those given with regard to claim 12.

Accordingly, it is respectfully submitted that dependent claim 25 is patentable over Garg et al., Robins et al., and Lane, whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

Dependent claim 33 recites controls for performing at least one of a fast forward, a rewind, a step forward, and a step backward of the replay sequence. Initially, claim 33 depends from claim 32. The disclosure of Lane fails to cure the deficiencies in the disclosures of Garg et al. and Robins et al. described above with regard to claim 32. Claim 33 is, therefore, patentable over Garg et al., Robins et al., and Lane, whether taken alone or in any reasonable combination, for at least the reasons given with regard to claim 32. Claim 33 also recites features similar to features described above with regard to claim 12. Claim 33 is, therefore, also patentable over Garg et al., Robins et al., and Lane, whether taken alone or in any reasonable combination, for reasons similar to those given with regard to claim 12.

Accordingly, it is respectfully submitted that dependent claim 33 is patentable over Garg et al., Robins et al., and Lane, whether taken alone or in any reasonable combination. Reversal of the rejection is respectfully requested.

IX. CONCLUSION

In view of the foregoing arguments, Appellant respectfully solicits the Honorable Board to reverse the Examiner's rejection of claims 1-36 under 35 U.S.C. § 103.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

including extension of time fees, to Deposit Account No. 07-2347 and please credit any excess fees to such deposit account.

Verizon Corporate Services Group Inc.

By: Joel Wall /es

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APPENDIX

1. A method for visualizing a network that includes a plurality of nodes, comprising:

collecting information from at least one of the nodes, the information describing network operation over a period of time;

reconstructing the network operation for the time period from the collected information; and

replaying, for an operator, the network operation as the network operation occurred during the time period using the reconstructed network operation.

2. The method of claim 1, wherein the collecting includes:

obtaining at least one of node status change information, information regarding messages received and transmitted in the network, and link status change information.

3. The method of claim 1, wherein the collecting includes:

obtaining forwarding tables from the nodes.

4. The method of claim 3, wherein the reconstructing includes:

creating forwarding tables from the collected information.

5. The method of claim 4, further comprising:

comparing the forwarding tables obtained from the nodes to the created forwarding tables; and

measuring routing protocol convergence time based on the comparison.

6. The method of claim 1, wherein the reconstructing includes:

combining information from at least two of the nodes,

sorting the combined information by time, and

reconstructing the network operation using the sorted information.

7. The method of claim 1, wherein the replaying includes:

displaying the network operation to the operator as an interactive network topology diagram.

8. The method of claim 7, wherein the displaying includes:

providing detailed information regarding the network operation in response to an instruction from the operator.

9. The method of claim 8, wherein the providing includes:

displaying detailed information regarding one of a node, a link, and a message in the network.

10. The method of claim 1, wherein the replaying includes:

displaying the network operation to the operator, and

permitting the operator to manipulate the displaying of the network operation.

11. The method of claim 1, wherein the replaying includes:

permitting the operator to manipulate the replaying of the network operation.

12. The method of claim 11, wherein the permitting includes:

allowing the operator to at least one of fast forward and rewind the replaying of the network operation.

13. A system for visualizing a network that includes a plurality of nodes, comprising:

means for collecting information from at least one of the nodes, the information describing network operation over a period of time;

means for reconstructing the network operation for the time period from the collected information; and

means for replaying the reconstructed network operation over the time period for an operator.

14. A system for visualizing a network that includes a plurality of nodes, comprising:

a memory that stores instructions; and

a processor configured to execute the instructions in the memory to collect information from at least one of the nodes, the information describing network operation over a period of time, reconstruct the network operation for the time period from the collected information, and cause the network operation to be displayed, for an operator, as the network operation occurred

during the time period using the reconstructed network operation.

15. The system of claim 14, wherein when collecting, the processor is configured to obtain at least one of node status change information, information regarding messages received and transmitted in the network, and link status change information.

16. The system of claim 14, wherein when collecting, the processor is configured to obtain forwarding tables from the nodes.

17. The system of claim 16, wherein when reconstructing, the processor is configured to create forwarding tables from the collected information.

18. The system of claim 17, wherein the processor is further configured to compare the forwarding tables obtained from the nodes to the created forwarding tables, and measure routing protocol convergence time based on the comparison.

19. The system of claim 14, wherein when reconstructing, the processor is configured to combine information from at least two of the nodes, sort the combined information by time, and reconstruct the network operation using the sorted information.

20. The system of claim 14, wherein when causing the network operation to be displayed, the processor is configured to present the reconstructed network operation to the

operator as an interactive network topology diagram.

21. The system of claim 20, wherein when presenting, the processor is configured to provide detailed information regarding the network operation in response to an instruction from the operator.

22. The system of claim 21, wherein when providing, the processor is configured to display detailed information regarding one of a node, a link, and a message in the network.

23. The system of claim 14, wherein when causing the network operation to be displayed, the processor is configured to permit the operator to manipulate the displaying of the network operation.

24. The system of claim 14, wherein when causing the network operation to be displayed, the processor is configured to replay the network operation over the time period, and permit the operator to manipulate the replaying of the network operation.

25. The system of claim 24, wherein when permitting, the processor is configured to allow the operator to at least one of fast forward and rewind the replaying of the network operation.

26. A computer-readable medium that stores instructions for causing at least one

processor to perform a method for visualizing a network that includes a plurality of nodes, comprising:

instructions for collecting information from at least one of the nodes, the information describing network operation over a period of time;

instructions for reconstructing the network operation for the time period from the collected information; and

instructions for presenting, to an operator, the network operation as the network operation evolved over time during the time period using the reconstructed network operation.

27. A computer-readable memory device of a node in a network containing a network operations data structure, comprising:

a first area that stores information regarding node status changes;

a second area that stores information regarding messages received and transmitted by the node; and

a third area that stores information regarding link status changes in the network.

28. The computer-readable memory device of claim 27, wherein the node status change information includes information regarding state changes of the node and time stamps indicating times corresponding to the state changes.

29. The computer-readable memory device of claim 27, wherein the message information includes information regarding messages transmitted or received by the node and

time stamps indicating times corresponding to the transmission or reception of the messages by the node.

30. The computer-readable memory device of claim 27, wherein the link status change information includes information regarding attribute changes of a link in the network and time stamps indicating times corresponding to the attribute changes.

31. The computer-readable memory device of claim 27, further comprising:

a fourth area that stores a forwarding table for the node.

32. An interactive graphical user interface for visualizing a network having a plurality of nodes, comprising:

a network topology diagram configured to display at least some of the nodes, links connecting the nodes, and messages transmitted through the network; and

replay controls that permit an operator to control a replay sequence of the network as the network operates over a period of time.

33. The graphical user interface of claim 32, wherein the replay controls include controls for performing at least one of a fast forward, a rewind, a step forward, and a step backward of the replay sequence.

34. A method for visualizing a network having a plurality of nodes, comprising:

recording network events by one or more of the nodes over a period of time;

collecting the recorded events from the nodes;

recreating operation of the network over the time period from the recorded events; and

displaying the recreated network operation.

35. The method of claim 34, wherein the recording includes:

generating a time stamp for each of the recorded events.

36. The method of claim 35, wherein the recreating includes:

combining the recorded events from the nodes, and

sorting the recorded events based on the generated time stamps.